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IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :
ANTON NEGELE, ET AL. : EXAMINER: REDDICK, M. L.
SERIAL NO.: 09/830,566 :
FILED: May 7, 2001 : GROUP ART UNIT: 1713
FOR: AQUEOUS DISPERSIONS OF :
WATER-SOLUBLE POLYMERS OF N-
VINYL CARBOXAMIDES, THEIR
PREPARATION AND THEIR USE

DECLARATION UNDER 37 C.F.R. §1.132

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

I, Bettina Kristina Melanie Müller, Dr. rer. nat., a citizen of the Federal Republic of Germany and residing at 16, Neckarpromenade, 68167 Mannheim, Federal Republic of Germany, declare as follows:

I am a fully trained chemist, having studied chemistry at the University of Bayreuth, from 1993 to 1998, and at the Technical University of Munich, from 1998 to 2002;

I am well acquainted with technical English;

I joined BASF Aktiengesellschaft of 67065 Ludwigshafen, Federal Republic of Germany, in 2002, since when I have been working on the development of N-vinylformamide polymers.

I am familiar with the field to which the subject application relates.

I have read and understand the subject application and the Examiner's Official Actions according to which the claims are anticipated by or, in the alternative, obvious over Fong et al. (US 6,426,383 B1).

Essentially, the claims of the instant application relates to an aqueous dispersion of a water-soluble polymer of N-vinylformamide and/or of N-vinylacetamide, wherein the dispersion contains, based on 100 parts by weight of water,

- (A) from 5 to 80 parts by weight of a water-soluble polymer containing N-vinylformamide units and/or of N-vinylacetamide units and having a particle size of from 50 nm to 2 μ m
- (B) from 1 to 50 parts by weight of at least one polymeric dispersant which is selected from the group consisting of carboxymethylcellulose, water-soluble starch, starch esters, starch xanthogenates, starch acetates, dextran, polyalkylene glycols, polyvinyl acetate, polyvinyl alcohol, polyvinylpyrrolidone, polyvinylpiperidine, polyethyleneimine, polyvinylimidazole, polyvinylsuccinimide, a 1:1 molar ratio copolymer of N-vinylcaprolactam and N-vinylacetamide, and polydiallyldimethylammonium chloride,

the aqueous dispersion being substantially free of stabilizing inorganic salt.

The polymeric dispersant is incompatible with the polymers formed from the monomers (A) in aqueous solution (page 4, lines 31 to 33).

Fong et al. (US 6,426,383 B1) relates to an aqueous dispersion of discrete particles of a water-soluble polymer obtainable by polymerization of a vinylamide monomer and at least one water-soluble vinyl monomer (claim 1, column 16, line 59 to column 17, line 49) in an aqueous salt solution.

Fong et al. state at col. 14, lines 25-27 that:

In preparing the aqueous polymer dispersion in accordance with the present invention, inorganic salts soluble in water may be required.

In order to determine the function of salt in the preparatory process and dispersion taught by Fong et al. (US 6,426,383 B1), I have carried out a Comparative Experiment in which, under otherwise identical conditions, I reworked the Example 1 of Fong et al. without the use of inorganic salt.

Comparative Example

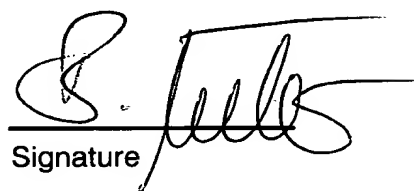
To a reaction kettle equipped with a reflux condenser, N₂ dispersion tube, stirrer and turbine and thermocouple, was added N-vinylformamide monomer (BASF quality, >98.5 %, 75 g), poly(vinylalcohol) (available from Aldrich, 10% solution, molecular weight 124,000 to 186,000, 87 to 88 % hydrolized, 40 g), water (250 g) and glycerol (available from Riedel-de Haen, 6 g). The solution was stirred and heated to 45 °C. The initiator, V-50 (available from WAKO) was added to one portion (0.2 g, 20 mL H₂O). The total reaction time was 3.5 hours. As the reaction proceeds there was an increase in viscosity from 15 mPas to 90 mPas finally. During the reaction the solution remained clear, there was ocularly no-hint of turbidity. The finally clear polymer solution was checked in a lab microscope from Leitz Diaplan. With a magnification of 500 no particles were observed.

Additionally, a second Comparative Example was made in an identical manner as described above, but the total reaction time was 6.5 hours. During the polymerization a high increase of viscosity was observed. The finally clear polymer solution was checked in a lab microscope from Leitz Diaplan. With a magnification of 500 no particles were observed as well.

Furthermore, I have reworked Example 1 identically by addition of inorganic salts. NaNO_3 (120 g) was added to the reaction mixture at the beginning and NaCl (125 g) was added in portions throughout the reaction. After 3.5 hours a milky-white dispersion was obtained analogous to Example 1 of Fong et al. (US 6,426,383 B1).

The results of the Comparative Example and the reworked Example 1 of Fong et al. show that, the inorganic salt must be used to get an aqueous milky-white dispersion. The inorganic salt is not an optional component, it is absolutely necessary to achieve an milky-white dispersion.

I further declare that all statements made herein of my own knowledge are true and all statements made on information or belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.


Signature

17.07.2003
Date